HALF YEARLY EXAMINATION 2023-24

SUBJECT-MATHEMATICS

CLASS-9TH Set A

Time: 3 Hours **Max.marks 75**

Instructions :

1. All the questions are compulsory.
2. Marks allotted for the questions are mentioned against them.
3. Questions from 1 to 5 are objective type questions.
4. Internal choices have been provided for the questions from 6 to 23.

Q-1 Choose the correct option: **$1 \times 6 = 6$**

(i). The sum or difference of a rational and an irrational number will be:

(a) rational number (b) irrational number

(c) natural number (d) Integers

(ii). The value of $(3+\sqrt{3})(3-\sqrt{3})$ is :

(a) 0 (b) 1 (c) 3 (d) 6

(iii). Which of the following is not a polynomial ?

(a) 5 (b) $y+\frac{2}{y}$ (c) 0 (d) $\sqrt{2}x+3$

(iv). The degree of polynomial $x^2+3x^4+x-4x^3+7$ is :

(a) 2 (b) 4 (c) 3 (d) 0

(v). The number obtained by subtracting $\frac{1}{4}$ from $\frac{3}{4}$ is:

(a) $\frac{1}{2}$ (b) $\frac{1}{4}$ (c) $\frac{1}{5}$ (d) 1

(vi). The equation $y = 3x + 5$ has:

(a) a unique solution. (b) There are only two solutions.

(c) There are infinitely many solutions. (d) There is no solution

Q-2. Fill in the blanks: **$1 \times 6 = 6$**

(i). Point $(0,-5)$ will be located on ---------- axis.

(ii). The graph of $x = a$ is a straight line parallel to the---------- axis.

(iii). Those lines which are parallel to the same line are mutually ----------

(iv). Angles opposite to equal sides of an isosceles triangle are ----------.

(v). The quadrilateral whose all sides are equal and each angle is of $90°$ is called ----------.

(vi). Two angles whose sum is $180°$ are called ---------- .

Q-3. Write true or false: $1 \times 6 = 6$

(i). The value of the remainder in $59 \div 8$ is 5.

(ii). The point (1,3) is a solution of the equation $x + y = 4$.

(iii). In a triangle, at most two angles can be right angled.

(iv) The line segment joining the center to any point on the circle is the circumference of the circle.

(v). -5 is smaller than 0 but larger than -8.

(vi). The measure of a straight angle is 180^0

Q-4 Match the columns: $1 \times 6 = 6$

Column A	Column B
(i). *rectangle is a*	(a) *Circumference*
(ii). *Addition of* $2x$ *to* 3	(b) *Triangle*
(iii). $(-a)(-2b)$	(c) $90°$
(iv). *Circle*	(d) $2x + 3$
(v). *Right angle*	(e) $2ab$
(vi). *A closed figure with three sides*	(f) *quadrilateral*

Q-5 Write the answer in one word or sentence- $1 \times 6 = 6$

(i). Write the degree of linear polynomial.

(ii). How many groups will be formed if 28 beads are divided into groups of 4 each?

(iii). In which quadrant will the point (4, –3) be located?

(iv). What will be the distance of point (–5,2) from x-axis?

(v). What will be the sum of the first ten even natural numbers?

(vi). What is the maximum number of circles that can be drawn through three non-collinear points?

Q.6. Find four rational numbers between $\frac{1}{5}$ and 1 2

Or

Rationalize the denominator of $\frac{1}{\sqrt{2}}$

Q.7. Simplify : $(7)^{\frac{1}{2}} \cdot (8)^{\frac{1}{2}}$ 2

Or

Simplify : $\frac{5}{\sqrt{3}-\sqrt{5}}$

Q.8. Factorize : $x^3 - 2x^2 - x + 2$ 2

Or

Write $(3a + 4b)^3$ in expanded form.

Q.9. Plot the points (1,5), (4,-3), (-5,4) and (-3,-2) on the Cartesian plane. 2

Or

In how many parts the cartesian plane is divided by x-axis and y-axis and what these parts are called ?

Q.10. Write in which quadrants the points (-2,4), (3,-1), (-1,0) and (1,2) are located. 2

Or

Write the abscissa and ordinate at the points (5,2) and (7,4).

Q.11. Write the equations of any two lines passing through the point (1,2) 2

Or

Write two solutions of the equation $4x + 3y = 12$

Q.12. If the point (3,4) lies on the graph of equation $3y = ax + 7$ then what is the value of a? 2

Or

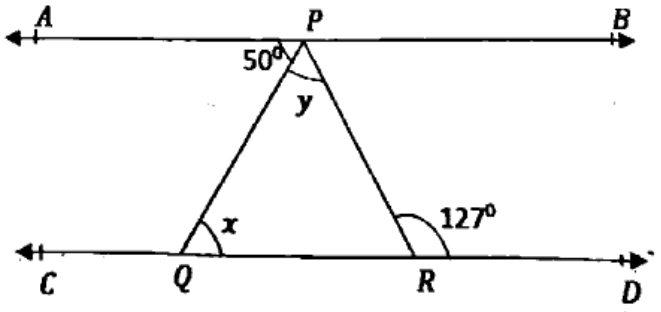
For what value of k, $x = 2, y = 1$ is a solution of the equation of $2x + 3y = k$.

Q.13. If a point C is situated between two points A and B such that $AC = BC$ then prove that $AC = \frac{1}{2}AB$ 2

Or

If A, B and C are three points situated on a line and B lies between the points A and C then prove that $AB + BC = AC$

Q.14. In the given figure, if $AB \parallel CD$, $\angle APQ = 50°$ and $\angle PRD = 127°$ then find x and y 2



Or

Define straight angle.

Q.15. In ΔABC, angle bisector AD of $\angle A$ is perpendicular to side BC.

Show that $AB = AC$ 2

Or

Show that each angle of an equilateral triangle is 60^0

Q.16. Divide 360 in the ratio 5 : 7 2

Or

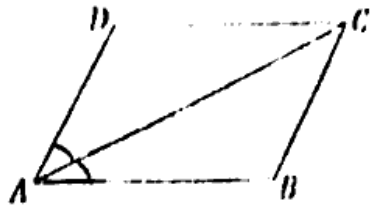
If Mohan is twice as tall as Ramesh, then what is the ratio of the heights of Mohan and Ramesh?

Q.17. A shopkeeper bought a copy in ₹35.15 and sell it in ₹45.65 then how much profit he received ? 2

Or

The cost of a shirt is ₹700. 50.The shopkeeper sells it at a discount of ₹122.65, then what will be the selling price of the shirt?

Q.18. In the following figure, diagonal AC of a parallelogram $ABCD$ bisects $\angle A$.



Show that $ABCD$ is a rhombus.

Or

If the diagonals of a parallelogram are equal, show that it is a rectangle.

Q.19.Two angles of a quadrilateral are 60^0 and 70^0 and the other two angles are equal, then find these angles of the quadrilateral.

Or

Prove that the line segment joining the midpoints of sides of a triangle is parallel to the third side.

Q.20. Show that $1.272727..... = 1.\overline{27}$ can be expressed as $\frac{p}{q}$ where p and q are integers and $q \neq 0$.

Or

Simplify $\frac{5}{\sqrt{7}-\sqrt{2}} + \frac{3}{\sqrt{5}+\sqrt{2}}$

Q.21. Factorize : $x^3 - 23x^2 + 142x - 120$

Or

Find the value $(-12)^3 + 7^3 + 5^3$ of without calculating their cubes.

Q.22. Prove that equal chords of a circle subtend equal angles at the centre. 4

Or

Two chords AB and CD of length $5cm$ and $\quad$ of a circle are parallel and lie on opposite sides of the centre. If the distance between AB and CD is $6cm$ then find the radius of the circle.

Q.23. By using identities find the value of $(999)^3$

Or

Check whether $7 + 3x$, is a factor of $3x^3 + 7x$ or not.

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